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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,184

03/24/2005

Takahiro Horiguchi

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

MACARTHUR, SYLVIA

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

09/04/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/529,184	Applicant(s) HORIGUCHI ET AL.	
	Examiner Sylvia R. MacArthur	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 7-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-3 and 7-14 have been considered but are moot in view of the new ground(s) of rejection. The amendment to claims 1, 7, 13, and 14 recited a metal walled processing vessel is interpreted that at least one wall of the processing vessel is made of a metal. This amendment necessitates the re-introduction of the prior art of Okase et al (US 6,399,922)
2. Applicant has cancelled claims 5 and 6 and thus their previous 112, 2nd paragraph rejections are withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okase et al (US 6,399,922) in view of Aoyama et al (US 5,651,827) and Shamouilian et al (US 6,440,922).

Regarding claim 1: Okase et al teaches a processing vessel 24 made of Al see col. 5 lines 37-39 having a gas injection nozzle unit (showerhead 72) connected to the side of the vessel, an UV light source 92, an opaque case (liner) see discussion of transmitting window not

that the window cover an inner wall that is mounted in aperture 82 see col. 7 lines 49-56, a supply of radials via gas source 71) a heater portion 44, a holding member (worktable 36).

Okase et al fails to a rotational drive mechanism and a remote plasma part

Aoyama teaches a rotational drive means see Fig.6.

The motivation to provide a rotational drive means in the apparatus of Okase et al is that rotating the substrate during process is conventional and known to improve processing time and process result uniformity. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide rotational mechanism is the apparatus of Okase et al in order to rotate the wafer as taught by Aoyama et al.

The modification of Okase et al and Aoyama et al fails to teach the remote plasma part.

The prior art of Shamouilian et al teaches a PECVD chamber with a gas supply provided at all four walls, namely the top, bottom, left, and right sides. Col. 3 lines 54 suggests that quartz could be used a material of construction of the chamber. According to col. 4 line 35-col. 5 line 60 a RF power source, electrode, and an antenna 125 act as plasma generators. The prior art of Shamouilian et al reveals that it conventional to provide such generators to create a plasma of the process gas. Col. 7 lines 1-11 reveals that radiant lamps are used to provide greater temperature uniformity and faster and more responsive control over temperature fluctuations inside the chamber 25. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide

a remote plasma part as taught by Shamouilian et al in the apparatus of Okase et al as modified by Aoyama as an alternative mode/design of processing.

Regarding claims 2 and 3: See Figures of Okase et al.

Regarding claim 7: Okase et al fails to teach a UV protecting glass window blocking UV on the side of the processing vessel.

Aoyama et al further teaches UV glass blocking windows that are part of the opaque liner, see Figs. 7 (element 20), Fig. 8 (element 18), Fig. 11(lb), Fig. 12 (opaque portions), Figs. 14 and 16 (element 8).

The motivation to provide a UV protecting glass in the location suggested by Aoyama et al is that this allows for more controlled path of UV treatment. Such control will optimize the product result and only allow treatment in the portion of the chamber as desired. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a UV protecting glass in the location suggested by Aoyama et al is that this allows for more controlled path of UV treatment

Regarding claims 8-10: Okase et al fails to teach multiple part windows. See Aoyama wherein the first and second windows are the transparent and opaque portions illustrated in each Figure listed above, see also col. 3 lines 38-65.

Regarding claims 11 and 12: The susceptor and pins (arm portions) of Aoyama are made of transparent quartz according to col. 8 lines 50-64.

The motivation to modify the apparatus of Okase et al with the multiple part window and susceptor/pins made of quartz is that the multiple part window is an obvious matter of design

choice to construct the window of one-piece or to construct it of multiple pieces. Likewise, the motivation to construct the susceptor and pins of transparent quartz is that the material allows for more efficient temperature control of the wafer by using the heat from the UV lamps in addition to the heater in the support. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Okase et al with the teachings of Aoyama et al.

Regarding claim 14: See the Figures of Okase et al for the evacuation openings. Recall the prior art of Shamouilian et al provides teachings of the remote plasma part.

See Figures of Shamouilian et al, evacuation opening is interpreted as exhaust system 80 which further includes 90 and 85.

The motivation to provide the evacuation opening of Shamouilian et al is that these system and configuration is known to successfully exhaust spent gas and control the pressure of the process gas in the chamber. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the evacuation opening of Shamouilian et al in the apparatus of Aoyama et al.

Regarding claims 15 and 16: In Aoyama et al the opaque and transparent cases coexist on the wall of the chamber they both are depressurized at the same time.

Regarding claim 17: The apparatus of Okase et al as modified by Aoyama et al fails to teach a SiC heater plate.

The prior art of Shamouilian et al mentions in col. 4 lines 14-34 that SiC is among the known materials of construction of dielectric member 100 see Figure 1. The motivation to

provide plate of SiC is that this material is a known dielectric material having the chemical and physical properties that can withstand the claimed process. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the apparatus of Okase et al as modified by Aoyama et al as modified by Shamouilian et al to use SiC.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-Th during the hours of 8 a.m. and 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 30, 2009

/Sylvia R MacArthur/
Primary Examiner, Art Unit 1792